

STATEMENT OF
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ON BEHALF OF THE FASHION JEWELRY AND ACCESSORIES TRADE
ASSOCIATION
IN SUPPORT OF SB 84, AN ACT CONCERNING CADMIUM IN CHILDREN'S
JEWELRY
BEFORE THE GENERAL LAW COMMITTEE

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SUMMARY

Good morning. My name is Sheila Millar. I am a partner with the law firm of Keller and Heckman, LLP and am here representing the Fashion Jewelry and Accessories Trade Association ("FJATA"). Thank you for the opportunity to appear before you in support of SB 84, An Act Concerning Cadmium in Children's Jewelry. FJATA supports this bill because it adopts science-based standards for cadmium recommended by the U.S. Consumer Product Safety Commission in a peer-reviewed study, and embodied in an international children's jewelry safety standard, ASTM F223-11.

The CPSC completed an extensive evaluation of the potential risks of cadmium in children's jewelry and toys in published in October, 2010.¹ A copy of this report is being submitted for the record. The CPSC established a toxicological limit for acute exposures associated with ingestion. In its peer-reviewed report, CPSC issued recommended safety limits for cadmium of 200 µg for ingestion exposures, measured by a 24-hour acid extraction test, and 18 µg for mouthing exposures, measured by a saliva test. The results of CPSC's tests showed that migration of cadmium was not proportionate to total content. In its October, 2010 staff report, the CPSC therefore concluded that a total content limit for cadmium was not supported by its research. CPSC characterized as "essential" that stakeholders working to develop a children's jewelry safety standard adopt an approach based principally on evaluating children's jewelry products for their potential to allow for cadmium uptake in the body if accidentally ingested.² In short, **CPSC recommended adoption of a migration standard.**

CPSC urged the jewelry industry to adopt its recommendations through an ongoing standards-development initiative at ASTM International that included a broad group of diverse stakeholders. ASTM 2923-11 adopts the CPSC's recommendation that acid extraction tests assessing the amount of cadmium that might be released should a child accidentally swallow a metal or plastic component of jewelry should be the principal determinative of safety.

In addition to incorporating limits on cadmium derived from the CPSC Staff Report on Cadmium in Children's Metal Jewelry (October 2010) at the express request of the Commission, ASTM F2923-11 addresses all known potential hazards for jewelry designed and intended primarily for children 12 and under. For example, the standard covers nickel release, magnets, batteries, and more. Per ASTM procedures, the standard is currently under review and an updated version is expected this year. Subcommittee members include CPSC staff representatives involved in the CPSC's 2010 review of cadmium in jewelry. They continue to express support for the current cadmium requirements of ASTM F2923-11.

ASTM F2923-11 embraces the CPSC recommendations in how to safeguard children from exposure to potentially harmful levels of cadmium. The standard also establishes a screening limit of 300 ppm based on data establishing that none of the tests indicated any potential risk of migratable cadmium release from products containing trace amounts of cadmium. We urge Connecticut to support SB 84 and to adopt a harmonized approach to children's jewelry safety that is both health-protective and consistent with the recommendations of the national federal consumer product safety agency.

¹ Staff Report, Cadmium in Metal Jewelry, October, 2010, attached to letter to Brent Cleaveland, Executive Director, Fashion Jewelry and Accessories Trade Association, October 19, 2010, available at <http://www.cpsc.gov/LIBRARY/FOIA/FOIA11/os/cadmiumjewelry.pdf>.

² See January 24, 2011 memorandum from CPSC to the ASTM F15.24 Subcommittee on Children's Jewelry, available at <http://www.cpsc.gov/PageFiles/96086/cadmiumjewelrycomm.pdf>.

Background

It is important to note that the jewelry industry strongly opposes use of high amounts of cadmium in jewelry. However, cadmium has been used for decades in both fashion and fine jewelry products without any reports of adverse health effects in adults or children at levels historically used. Cadmium is a heavy metal found in nature. It is in soil and in rocks, so is found with ores used in metals to make jewelry. Cadmium is therefore often present, typically in trace amounts, in metal components, such as zinc or tin, used to make jewelry, and also may be added in small amounts to provide certain technical properties.

In jewelry manufacturing, including karat gold jewelry and sterling silver jewelry, one of the principal longstanding uses of cadmium has been as a component in solders used in joining jewelry components. While low-cadmium solders are now available, it is important to remember that many new karat gold and sterling silver alloy melts begin with using what the industry calls clean scrap material, important with the implementation of green initiatives in the industry. This material is typically created from general jewelry fabrication and is reusable material free of oil, grease and contaminants. With the introduction and use of both clean scrap material and other general jewelry scrap, there exists in the normal course of alloying some amount of cadmium in precious metals used to make jewelry. While levels are generally low (levels are below 300 ppm over 95% of the time), cadmium may be present at levels above 300 ppm in gold or silver alloys through these recycling practices. Precise control of total content in the recycling stream is not possible.

Cadmium can also be found in certain pigments used in paints or surface coatings.

In addition to use in metals, solder, and solder-filled jewelry, cadmium is used as a stabilizer in certain plastics and may be used as a pigment in crystal, glass, ceramics, enamel or plastics. Cadmium in crystal and glass, like lead, will not easily migrate because it becomes part of the matrix of the crystal. In some applications, like ceramics or enameling, the manufacturing process results in a strong bond of the elements and the other material, also resulting in limited bioavailability of the element.

Development of the ASTM Children's Jewelry Safety Standard

When initial reports in 2010 suggested that cadmium might be present in children's jewelry at levels well above amounts historically used, both CPSC and the jewelry industry began conducting tests to assess the potential for children to be exposed to harmful levels of cadmium. FJATA, with other stakeholders, including test laboratories, representatives of the fine jewelry industry, CPSC and consumer groups, formed a Subcommittee of ASTM International's F15 committee and initiated a process to develop a cadmium safety standard for children's jewelry. Representatives of CPSC's toxicological, testing and human factors staff participated in the ASTM F15.24 Subcommittee and were involved in all stages of the standards development process. At the outset, FJATA advised the ASTM Subcommittee that a guiding principle for the work of the Subcommittee would be that the Subcommittee would look to the best available science in developing the children's jewelry safety standard.

CPSC also received a petition requesting that it adopt a total content limit on “toy jewelry” that contained more than “trace amounts” of cadmium filed by a coalition of environmental groups in May, 2010.³ In June, 2010, the state of Connecticut adopted legislation establishing a 75 ppm total content limit for cadmium in children’s jewelry, to go into effect July 1, 2014. This action occurred before the CPSC’s extensive technical work was completed. Presumably, the adopted effective date of 2014 anticipated that additional technical data might become available from CPSC before that date.

The CPSC’s October, 2010 report on cadmium⁴ represents the most extensive review of cadmium in children’s products ever conducted, and was months in the making. In sum, the CPSC staff’s technical report *rejected* a total content limit as a sound basis for regulation of cadmium in children’s jewelry or toys. Instead, CPSC recommended migration testing of metals used in jewelry to prevent exposure to harmful levels of cadmium, and established recommended exposure limits based on its analysis of the evaluation of toxicological data of 18 micrograms in a saline test (simulating mouthing exposure) and 200 micrograms in a 24-hour acid extraction test (simulating accidental ingestion). The Commission staff expressly urged the jewelry and toy industries to consider its technical input and recommended migration testing approach in working on separate ASTM standards for children’s jewelry and toys.

In a January 24, 2011 memorandum to the ASTM F15.24 Subcommittee on Children’s Jewelry,⁵ CPSC reiterated its request that the Subcommittee focus on migration testing in developing recommended limits for cadmium in children’s jewelry. In the memo, the staff noted:

The staff also recognizes that the mere presence of cadmium in a product does not establish that a hazard exists, because exposure to hazardous amounts of the chemical from use of the product may not be likely for all products. Nonetheless, staff believes that the presence of cadmium could present a risk to children if use of the product, including ingestion, results in exposure to hazardous quantities of cadmium. As such, simulating possible chemical and physical processes based on ingestion that might degrade a cadmium containing product, allowing for cadmium uptake in the body, *is deemed not only relevant but also essential*. These processes include, but are not limited to, the electrochemical process of galvanic corrosion; constant agitation as in peristalsis; the presence of an acidic solution similar to gastric conditions; and the degradation of an electroplated coating due to the acidic medium and abrasion (emphasis added).

Notably, CPSC’s test results establishing “that there is no clear relationship between the extractability of cadmium from children’s metal jewelry or other metal items and the cadmium content of items”⁶ were very consistent with test results sponsored by FJATA. Those tests also

³ Citizen Petition to EPA and CPSC Regarding Cadmium in Children’s Products, Especially Toy Metal Jewelry, May 28, 2010, available at <http://www.cpsc.gov/LIBRARY/FOIA/FOIA10/petition/cadmium.pdf>.

⁴ See footnote 1.

⁵ See footnote 2.

⁶ *Id.*

failed to show a close link between total cadmium content and migration.⁷ Similarly, both CPSC and FJATA tests demonstrated that the propensity for cadmium to be released from metal substrates such as zinc and tin differed by about an order of magnitude. The CPSC has not determined that cutting or abrading samples is required to evaluate the potential for cadmium to migrate from metal jewelry components; exposure to an acid solution for 24 hours under constant agitation conditions adequately evaluates the potential for hazardous levels of cadmium to migrate from the samples.

The CPSC tested actual jewelry components (charms, clasps, etc.) containing varying levels of cadmium in developing its report. On the low end, CPSC tested several samples that contained less than 1.35% total cadmium; total cadmium content ranged from 286 ppm to 1.35%. None of these samples yielded anything more than non-detectable or very low levels of detectable extractable cadmium in acid and saline test conditions. One sample containing approximately 286 ppm total cadmium (confirmed via ICP-OES) yielded detectable cadmium in an acid extraction test of only 1.21 ug/g and 0.67 ug/g in a saline test. Both values are significantly below CPSC's recommended limit of 200 ug for acid extraction and 18 ug for mouthing exposure, respectively. Some high cadmium content samples yielded low or non-detectable cadmium.

CPSC's report included tests of 8 wire samples, including in powdered form, with a cadmium content measured by ICP-OES ranging from 200 ppm to 78.44 % cadmium (total content from low to high was 0.02% or 200 ppm; 14.44%; 19.30%; 19.322%; 23.63%; 30.601%; 59.99% and 78.44%). The wire sample containing 200 ppm cadmium yielded no detectable migratable cadmium in an acid extraction test, even when the test time was extended to 48 hours, and also yielded non-detectable cadmium in a 6 hour saline test.⁸ CPSC again noted that migration was not proportionate to total content, and that the type of alloy involved had an effect on migration.

ASTM 2923-11

After much deliberation, the ASTM Children's Jewelry Subcommittee adopted the CPSC's recommendation for a migration standard for cadmium in metal components of jewelry with one change. The standard adopts a total content *screening limit* of 300 ppm for cadmium in metal substrate of jewelry derived from the CPSC and industry test data. Although jewelry containing less than about 1.5% cadmium in metal components was not associated with the potential for exposure to harmful levels of cadmium in CPSC's tests, applying some additional conservative factors regarding the potential for migration, the final ASTM F2923-11 standard adopted a lower screening limit of 300 ppm to provide design guidance for material selection

⁷ Exponent Technical Report, Evaluation of Cadmium in Metal Jewelry, November, 2010.

⁸ CPSC also tested samples of metal alloys in powdered form. Since jewelry components are not in powdered form, the tests of powdered alloys are of interest primarily for purposes of determining the analytical precision of CPSC's method. CPSC's test procedure includes an alternative test option that involves grinding a metal sample and immersing the sample in an acid solution for 2 hours under constant agitation instead of the 24-hour test time required for intact components. This is because cadmium will be more readily released in powdered form. See CPSC Test Method CPSC-CH-E1004-11, Standard Test Method for Determining Cadmium Extractability from Children's Metal Jewelry, February 3, 2011.

while providing data-based assurance that metal components of jewelry products containing this amount of cadmium would never result in adverse health effects to children. For plastics, testing under the internationally-recognized toy safety testing procedure, EN-71, is required.

It is important to note that the ASTM F2923-11 cadmium substrate limits apply to all metals or plastics used in children's jewelry. Thus, while gold and precious metals are excluded from testing for lead under the standard, as well as under CPSC rules implementing the Consumer Product Safety Improvements Act (CPSIA), these materials are not excluded from the cadmium requirements of ASTM 2923-11 because of the historic use of cadmium in fine jewelry-making. Materials not associated with cadmium migration, like crystal and ceramics, are excluded from the limits. The standard also adopts limits for all heavy metals in paint and surface coatings, consistent with international toy safety standards. However, crystal, glass and other materials are not subject to cadmium limits in ASTM F2923-11 as cadmium has not been associated with any potential health risk in these materials.

ASTM 2923-11 is the first international safety standard for children's jewelry, and covers much more than cadmium. The ASTM Children's Jewelry Subcommittee agreed that the standard should address all identified potential risks associated with children's jewelry. ASTM 2923-11 therefore also adopts limits on mercury and other heavy metals (e.g., barium, selenium, hexavalent chromium, etc.) in paint and surface coatings of children's jewelry. The limits for these elements in surface coatings are identical to limits in the toy safety standard, ASTM F963, which is a mandatory national standard per the Consumer Product Safety Improvement Act ("CPSIA"). The limits on heavy metals in paint also mirror requirements of the European toy safety standard, EN-71. ASTM 2923-11 adopts one chemical requirement that is not found in the toy safety standard, namely, limits on migratable nickel in metals given potential allergic responses when children wear nickel-containing jewelry. ASTM 2923-11 also addresses potential physical hazards, like magnetic jewelry and battery-operated jewelry, in a common sense way, similar to the ASTM F963 requirements for toys. It also includes guidance on how to identify and distinguish children's jewelry from adult jewelry.

Cadmium Requirements of ASTM F2923-11 Are Recognized as Health-Protective by CPSC

The CPSC staff and Commissioners have recognized the adequacy of the ASTM children's jewelry standard. CPSC staff supported ASTM F2923-11's cadmium screening limit in a briefing sent to the Commissioners in 2012, saying that the 300 ppm screening limit "represents a relatively low cadmium concentration that, in staff's experience, is not expected to be associated with excess exposure or subsequent adverse health effects."⁹ The four sitting CPSC Commissioners, on a bipartisan basis, unanimously voted to reject a petition seeking a mandatory total content limit on cadmium in "toy jewelry" in July, 2012.¹⁰ In so doing, CPSC advised the petitioners:

⁹ See Staff Briefing Package, Staff Update, Petition HP 10-2 Requesting Restriction of Cadmium in Toy Jewelry, June 29, 2012 at p. 4, available at <http://www.cpsc.gov/PageFiles/91376/cadmium.pdf>.

¹⁰ See Record of Commission ballot vote at <http://www.cpsc.gov/library/foia/ballot/ballot12/cadmiumpet.pdf>.

The Commission finds that the requirements in the ASTM voluntary standard for children's jewelry (ASTM F 2923-11), and the mandatory standard for toy jewelry (ASTM F 963-11), set forth appropriate exposure limits and establish testing methods for soluble cadmium to determine whether a product may be considered a hazardous substance and that such limits and testing methods incorporated into the new standards will reduce the risk of harm from exposure to cadmium.¹¹

FJATA urges the state to replace its total cadmium content limit by adopting SB 84, which includes requirements based on the rigorous scientific approaches used to develop the ASTM Children's Jewelry Safety Standard. This will align state safety requirements with requirements recognized and enforced by CPSC.

Enclosure: **CPSC Staff report, Cadmium in Children's Metal Jewelry, October, 2010.**

¹¹ Letter from Todd Stevenson, Secretary to the Commission, to Empire State cConsumer Project, The Sierra Club, Center for Environmental Health and Rochestarians Against the Misuse of Pesticides, August 9, 2012, available at <http://www.cpsc.gov/PageFiles/143937/cadmiumdenial.pdf>.